

维西香茶菜的二萜成分

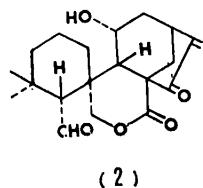
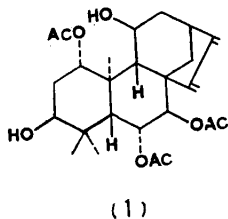
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关键词 二萜化合物; 对映-贝壳杉烷; 维西香茶菜; 维西香茶菜甲素

维西香茶菜 *Rabdosia weisiensis* C. Y. Wu 产云南西北部海拔2600米沟谷中, 其化学成分的研究未见报道。从该植物叶的乙醚提取物中, 分得两个二萜成分, 一为已知成分 trichorabdal A (2) [1], 一为新成分, 命名为维西香茶菜甲素 weisiensin A (1)。

维西香茶菜甲素 weisiensin A (1), $C_{26}H_{36}O_8$, mp 298—300°C, 其 ^{13}C NMR谱显示存在三个 CH_3 , 三个 CH_2 , 八个 CH , 三个四取代碳, 三个Ac, 二个烯碳和一个羰基碳。其 ^{13}C NMR谱 δ 205.5 (s), 151.2 (s), 111.7 (t), 29.5 (q), 24.7 (q), 16.0 (q) 信号和 ^1H NMR谱 δ 5.91, 5.13 (各1H, br.s), 1.74, 1.58, 1.31 (各3H, s) 信号提示维西甲素具有典型的ent-kaur-16-en-15-one骨架[2]。综合考虑碳谱和质谱可知维西甲素分子中含有三个仲乙酰氧基, 两个仲羟基。这五个含氧官能团是如何排布呢? 在 ^{13}C NMR谱中, 由C-10为43.6, C-20为16.0表明1 α 位有取代[3]; C-4为38.9, C-18为29.5, C-5为41.7表明3 β 位和7 β 位有取代[4, 5]; C-5为41.7, C-19为24.7表明6 α 位有取代[4, 5]; C-13为37.1, 表明C-12和C-14位无取代[6]; C-9为55.6, C-8为49.1, 表明11 β 位有取代[5]。另外 ^1H NMR谱中, 三个互相关联的信号: 2.69 (br.s), 6.10 (br.d, 3.5), 5.59 (d, 3.5) 可分别归属于5-H, 6 β -H和7 α -H, 3.72 (t, 3) 信号是由3 β -OH引起, 5.85 (t, 8) 信号是由于1 β -H除与乙酰氧基相连外, 还受3 β -OH的去屏蔽, 故向低场位移。剩下的4.49 (t, 5) 信号是由11 β -OH引起[7]。至此维西甲素的化学结构可以表示为1 α , 6 α , 7 β -Triacetox-3 β , 11 β -dihydroxy-ent-kaur-16-en-15-one (1)。weisiensin A (1)的 ^1H 和 ^{13}C NMR数据为: ^1H NMR (90MHz, C_6D_6N) δ : 7.07 (1H, d, 4.1, OH), 6.51 (1H, d, 3.5, OH), 6.10 (1H, br.d, 3.5, 6 β -H), 5.85 (1H, t, 8, 1 β -H), 5.91, 5.13 (各1H, br.s, 17-H₂), 5.59 (1H, d, 3.5, 7 α -H), 4.49 (1H, t, 5, 11 α -H), 3.72 (1H, t, 3, 3 α -H), 2.94 (1H, m, 13 α -H), 2.78 (1H, br.s, 9 β -H), 2.69 (1H, br.s, 5 β -H), 2.22, 2.15, 1.98 (各3H, s, 3 $\times$ OAc), 1.74 (3H, s, 20-CH₃), 1.58 (3H, s, 19-CH₃), 1.31 (3H, s, 18-CH₃)。 ^{13}C NMR



(22.63MHz, C_5D_5N) δ : 81.0(1-C), 33.3(2-C), 75.8(3-C), 38.9(4-C), 41.7(5-C), 70.4(6-C), 76.3(7-C), 49.1(8-C), 55.6(9-C), 43.6(10-C), 69.4(11-C), 38.6(12-C), 37.1(13-C), 36.8(14-C), 205.5(15-C), 151.2(16-C), 111.7(17-C), 29.5(18-C), 24.7(19-C), 16.0(20-C)。 $3 \times OAC$: 170.3, 170.3, 169.3; 21.9, 21.3, 21.1。

trichorabdal A(2)的 ^{13}C NMR数据未见报道,本文作了指定如下: ^{13}C NMR(22.63 MHz, C_5D_5N) δ : 31.7(1-C), 18.6(2-C), 40.2(3-C), 34.3(4-C), 56.9(5-C), 205.4(6-C), 171.3(7-C), 60.7(8-C), 47.7(9-C), 42.1(10-C), 65.0(11-C), 42.7(12-C), 35.2(13-C), 28.5(14-C), 201.6(15-C), 150.2(16-C), 117.7(17-C), 32.3(18-C), 26.1(19-C), 70.9(20-C)。

本研究 ^1H 和 ^{13}C NMR谱用Brucker WH-90 PFT脉冲付立叶变换波谱仪测定,以TMS为内标, C_5D_5N 为溶剂, δ (ppm)表示化学位移。MS用Finnigan-4510型质谱仪测定。熔点用Kofler显微测熔仪测定,未校正。

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DITERPENIDS OF RABDOSIA WEISIENSIS

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Abstract The present paper reports on a new diterpenoid, weisiensin A ($C_{26}H_{38}O_9$, mp 298—300°C), which is isolated from the ethereal extract of the dry leaves of *Rabdosia weisiensis* C. Y. Wu, the chemical structure has been shown to be 1 α , 6 α , 7 β -Triacetoxo-3 β , 11 β -dihydroxy-ent-kaur-16-en-15-one(1) on the basis of spectroscopic evidence and compared with known compounds. Trichorabdal A(2), a known component, is also isolated from this plant and its ^{13}C NMR data are assigned.

Key words Diterpenoid; ent-Kaurane; *Rabdosia weisiensis*; Weisiensin A; Trichorabdal A